

IN THE CLAIMS

Kindly cancel claims 1-20 and add new claims 21-30 as set forth below:

Claims 1-20 (Cancelled)

Claim 21 (New) A tomosynthesis based inspection method comprising the steps of:

acquiring tomosynthesis image data corresponding to a number of horizontal slice images extending through an object of interest;

defining a vertical region of interest from the tomosynthesis image data;

constructing a vertical slice image using the tomosynthesis image data associated with the vertical region of interest, the vertical slice image extending through the object of interest in an orientation generally orthogonal to the horizontal slice images; and

analyzing the vertical slice image to identify a vertical slice image signature.

Claim 22 (New) The inspection method of claim 21 further comprising the step of analyzing the vertical slice image signature to detect defects in the object of interest.

Claim 23 (New) The inspection method of claim 21 wherein the step of defining a vertical region of interest further comprises:

determining a signature value for the horizontal slice images; and

analyzing the signature value of the horizontal slice images to identify the best horizontal slice image extending through the object of interest.

Claim 24 (New) The inspection method of claim 23 wherein the step of constructing a vertical slice image further comprises:

identifying tomosynthesis image data corresponding to the best horizontal slice image and horizontal slice images above and below the best horizontal slice image; and

combining corresponding pixels from the tomosynthesis image data of the best horizontal slice image and horizontal slice images above and below the best horizontal slice image to synthesize the vertical slice image.

Claim 25 (New) The inspection method of claim 21 wherein the step of constructing the vertical slice image using the tomosynthesis image data further comprises:

synthesizing multiple images extending through the object of interest in an orientation generally orthogonal to the horizontal slice images;
determining an image signature for each of the multiple images; and
selecting the vertical slice image from the multiple images based on the image signature of the multiple images.

Claim 26 (New) The inspection method of claim 22 wherein the step of analyzing the image signature to detect defects in the object of interest further comprises determining whether a defect exists in a solder fillet.

Claim 27 (New) The inspection method of claim 22 wherein the step of analyzing the image signature to detect defects in the object of interest further comprises determining whether a void is present.

Claim 28 (New) The inspection method of claim 22 wherein the step of analyzing the image signature to detect defects in the object of interest further comprises determining whether a bridge is present.

Claim 29 (New) The inspection method of claim 22 wherein the step of analyzing the image signature to detect defects in the object of interest further comprises determining whether a device is tilted.

Claim 30 (New) The inspection method of claim 22 wherein the step of analyzing the image signature to detect defects in the object of interest further comprises determining whether an insufficient amount of solder is present.